.18 Marine Owners Manual

Congratulations on your purchase of a Pro Boat™ .18 Marine engine! Precision manufactured and assembled, your Pro Boat .18 Marine engine will provide you with trouble-free performance if you read and follow these instructions.

Using the Proper Fuel and Glow Plug

Using the proper fuel and glow plug is critical in order to achieve maximum performance and reliability. You must use fuel and glow plugs that are specifically designed for model car/boat applications. **Never use any type of model airplane glow fuel!** Use of model airplane fuel will damage your engine and immediately void any warranty.

We recommend using Blue Thunder™ or Blue Thunder Race Formula blend fuels with 20% nitro, providing the best combination of power and fuel economy. Pro Boat Blue Thunder fuels are vigorously tested, researched and formulated to deliver excellent power as well as engine protection.

A glow plug has been included and is ideal for breaking in your new engine. In fact during the break-in procedure, it is not uncommon to go through one or two glow plugs, as microscopic bits of metal (from the cylinder/piston wearing in) bond themselves to the plug element causing glow plug failure. We recommend a sport glow plug (DYN2500) or an O'Donnell 1/10 racing glow plug (DYN2521) as the absolute best glow plug for this engine, delivering an ideal balance of performance and longevity.

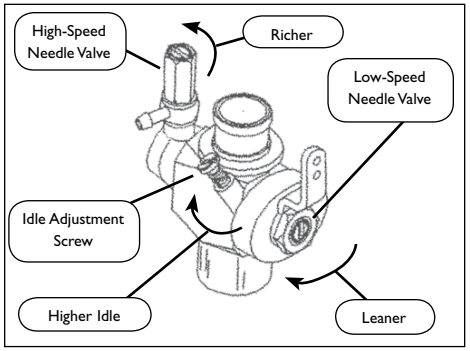
Carburetor Adjustments

Your Pro Boat .18 Marine engine comes equipped with a precision rotary carburetor. Take a moment to review the pictures below to familiarize yourself with the various functions of the carburetor. Loosening the nut located on the side of the crankcase under the carburetor body will allow you to rotate the carburetor. Make certain to mount the throttle arm to the side required by your particular boat. Although preset at the factory, some changes in the needle setting can occur during shipping and handling. We suggest the following settings for breaking in your engine:

High-Speed Needle: $2^1/_2$ turns out (counterclockwise) from closed.

Low-Speed Needle: $2^1/_2$ turns out (counterclockwise) from closed.

When checking the adjustment of the low-speed needle, it is crucial that the throttle barrel is closed completely when turning the needle and that you do not overtighten the needle.



Use the included screwdriver to make this job easier. When you feel resistance in the needle, immediately stop turning and begin turning the needles counterclockwise, counting the number of turns from "closed."

Water-Cooled Engine

Because the Pro Boat .18 Marine engine is watercooled and not air-cooled, make sure that you do not run the engine for an extended amount of time outside of the water. Continuously monitor the water outlet when the boat is running to make sure that the water is reaching the engine head. If the water does not reach the head to cool it, the engine will overheat and fail. This will cause permanent damage to the engine.

Starting Your Engine for the First Time

The Pro Boat .18 Marine engine comes equipped with the Pro Boat Pro Mix Carburetor. Each Pro Mix Carburetor is pre-adjusted at the factory. This setting should be approximately $2^1/_2$ turns open for the high-speed and $2^1/_2$ turns open for the low-speed needle. This should give you a slightly "rich" mixture of fuel to the engine. This setting is the safest way to break in your engine.

The first start of your engine is the most critical time of the engine's life, dictating how well it will perform. After installing the engine in your model and inserting the glow plug, turn on your radio system and attach a glow igniter to the glow plug.

When using a recoil starter, never pull the rope out to its full length, as doing so may cause damage and recoil starter failure. Quick, short pulls of the recoil starter are the best technique to use. Never extend the starter rope more than 12 inches.

Should the pull starter be extremely difficult to pull (will not extend out of the assembly), the engine may be flooded (hydro-locked). Excess fuel between the cylinder head and piston will not allow the piston to travel through its full range of compression, effectively "locking up" the engine. Should this occur, immediately remove the glow igniter from the plug. Using a glow plug wrench (DYN2510), remove the glow plug and turn the model upside down. Give the recoil starter a few short pulls to clear out the fuel, re-install the glow plug and start again.

You may need to "blip" the throttle on the transmitter (applying throttle on/off) while trying to start the engine, as new engines are more difficult to start due to the tight piston/cylinder fit. **Never start an engine above 1⁄4 throttle. Immediate damage to your engine can occur!**

When the engine starts, the exhaust should emit blue/ white smoke, indicating that the engine is excessively rich (a good thing during break-in). During the first tank of fuel, you may wish to set a higher than normal idle speed and/or leave the glow plug igniter attached in order to keep the engine from stalling. Drive the boat around while "blipping" the throttle and avoid operating the engine at full throttle for more than 2–3 seconds at a time. Consume the entire first two tanks of fuel in this manner.

After the first two tanks of fuel, begin leaning out the high-speed needle valve 1/8 turn at a time. It generally takes about 5 or 6 tanks of fuel before you'd want to start tuning for "maximum" power. **Do not skip this process of breaking in a new or rebuilt engine! Should you choose not to follow these procedures, you risk damaging your engine during the first tank of fuel.**

Your patience during these procedures will be rewarded by an engine that performs reliably and to its maximum power potential. First run attempts can be more frustrating than with other (less powerful) sport engines, so take your time—it will be worth the wait!

Glow plug failure is a common occurrence when breaking in a new engine. To test your plug, let the engine idle at a properly adjusted low-speed needle setting with the glow igniter attached. Then, remove the igniter. If you hear no appreciable change in engine rpm, then the plug is still good. If the engine loads up and the rpm's decrease, it's time to replace the glow plug.

Setting the Needle Valves

When adjusting the settings, always adjust the needles in small increments, about 1/8 of a full turn at a time. **Do not set the engine too lean, as it shortens the reliability of the engine.**

After you have attained the correct needle settings, the engine will have a strong-sounding, high-pitched whine at full speed, and a thin trail of blue/white smoke will come from the exhaust.

An engine should not be run too lean; doing so severely shortens the life of the engine. When an engine is set too lean, it will run very strong at first, but will soon begin to sag and hesitate or stall when accelerating.

Tuning the Low-Speed Needle

The low-speed needle (also referred to as the idle mixture or idle needle) should be set after you're satisfied with the high-speed needle setting. After achieving the proper operating temperature, reduce the engine throttle to idle and pinch the fuel line with your fingers close to the carb fuel inlet nipple. If the engine dies immediately, the lowspeed needle is set too lean. If the rpm's increase dramatically, the setting is too rich. The ideal setting results in the rpm's increasing just a slight amount after pinching the fuel line.

Idle Stop Adjustment

The last setting to be made is the idle stop screw. Turning this screw clockwise increases the idle speed; turning the screw counterclockwise will make the engine idle at a lower speed. Ideally, the engine should idle just fast enough to be reliable in acceleration and transition from idle to full speed.

Head Shims

Several head shims are added at the factory to make the engine easier to start when new. After break-in, you may remove all but one of these shims to increase compression and power.

Engine Maintenance

Periodic maintenance must be performed in order to keep your engine in proper operating condition. After each day of running, it's critical to use high quality afterrun oil to protect the internals of the engine and guard them against corrosion. The methanol used in the fuel attracts moisture that can cause corrosion (particularly in the ball bearings). We recommend Blue Thunder™ Final Run (DYN2255) as it's specifically formulated to protect your engine between uses. Follow these steps after running your engine:

1) Empty all fuel from the tank and fuel lines.
2) Use Final Run fuel following the instructions on the container.
3) Clean and inspect the engine and fuel system.

Troubleshooting Guide

Problem	Possible Cause/Solution
Engine won't start	• Clogged fuel line • Bad or improper glow plug • Glow igniter not charged
Engine starts, then dies	• Engine flooded • Pressure line blocked or disconnected • Bad glow plug
Engine starts and runs for 1⁄2 tank, then quits	• High-speed needle too lean • Hole or tear in fuel line • Bad glow plug or idle speed set too low • Overheated engine (too lean) • Improper needle settings

Warranty

Warranty Period
Exclusive Warranty- Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase by the Purchaser

Limited Warranty
(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

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If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

Safety Precautions
This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

Questions, Assistance, and Repairs
Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to productsupport@horizonhobby.com, or call 877.504.0233 toll free to speak to a service technician.

Inspection or Repairs
If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as **Horizon is not responsible for merchandise until it arrives and is accepted at our facility**. A Service Repair Request is available at www.horizonhobby.com on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Warranty Inspection and Repairs
To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

Non-Warranty Repairs
Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. **Please note: non-warranty repair is only available on electronics and model engines.**

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822

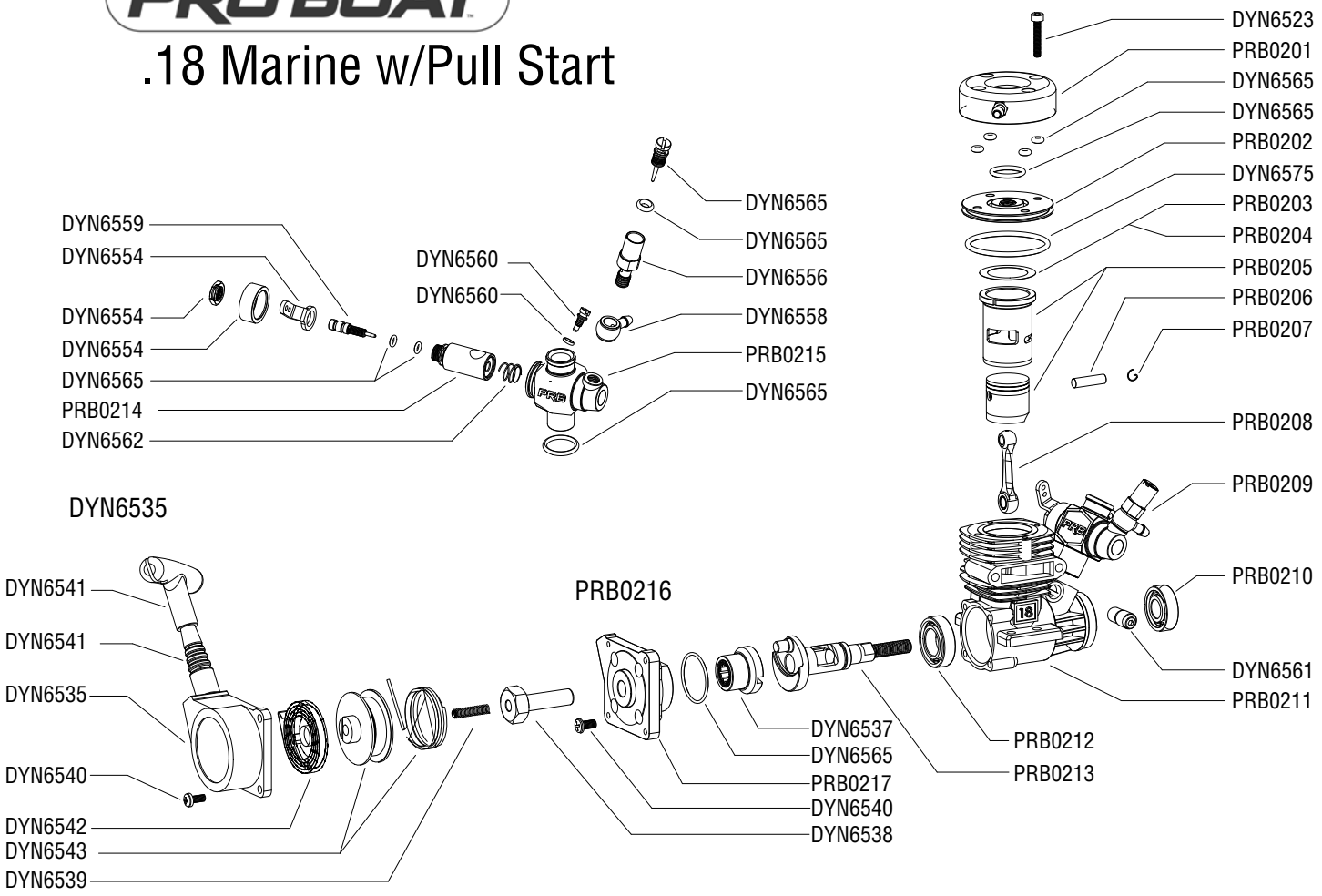
All other Products requiring warranty inspection or repair should be shipped to the following address:

Horizon Product Support
4105 Fieldstone Road
Champaign, Illinois 61822

Please call 877-504-0233 with any questions or concerns regarding this product or warranty.

PRO BOAT

.18 Marine w/Pull Start



ITEM NO.	DESCRIPTION
PRB0200	.18 Water-cooled Engine; Universal
DYN6523	M2.6 Head Screw (4)
PRB0201	Heat Sink Head
DYN6565	O-Ring Set
PRB0202	Head Button
PRB0203	Head Gasket (0.1mm)
PRB0204	Head Gasket (0.2mm)
PRB0205	Cylinder Piston Set
PRB0206	Wrist Pin
PRB0207	Wrist Pin Clips(2)
PRB0208	.18 PRO Connection Rod
PRB0209	Rotor Carburetor/PRB
PRB0210	Front Bearing
DYN6561	Carb. Retaining Post
PRB0211	.18 Crankcase
PRB0212	Rear Bearing
PRB0213	.18 Crankshaft
DYN6554	Throttle Arm w/ Nut
DYN6559	Low Speed Needle Valve
PRB0214	Throttle Barrel
DYN6562	Throttle Barrel Spring
DYN6560	Throttle Adjustment Screw
DYN6555	High Speed Needle Valve
DYN6556	High Speed Needle Holder
DYN6558	Inlet Nipple
PRB0215	Carburetor Body
DYN6535	Pull Starter Front parts
DYN6541	PS Handle
DYN6535	Pull Starter Rear Cover
DYN6540	Pull Starter Screw Set
DYN65442	PS Recoil Spring
DYN6543	PS Rope/Pulley
DYN6539	PS Cushion Spring
PRB0216	Pull Starter Rear parts
DYN6537	One-Way Bearing
PRB0217	Backplate
DYN6538	PS Shaft

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Pro Boat engines are manufactured in Taiwan and distributed worldwide by:

Horizon Hobby, Inc.
4105 Fieldstone Rd.
Champaign, IL 61822
www.horizonhobby.com